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# SAME OLD, SAME OLD: SCIENTIFIC EVIDENCE PAST AND PRESENT

Edward K. Cheng\*

LAWS OF MEN AND LAWS OF NATURE: THE HISTORY OF SCIENTIFIC EXPERT TESTIMONY IN ENGLAND AND AMERICA. By *Tal Golan*. Cambridge: Harvard University Press. 2004. Pp. vii, 325. \$49.95.

For over twenty years, and particularly since the Supreme Court's *Daubert*<sup>1</sup> decision in 1993, much ink has been spilled debating the problem of scientific evidence in the courts. Are jurors or, in the alternative, judges qualified to assess scientific reliability? Do courts really need to be concerned about "junk science"? What mechanisms can promote better decisionmaking in scientific cases? Even a cursory scan of the literature shows the recent explosion of interest in these issues, precipitating new treatises, hundreds of articles, and countless conferences for judges, practitioners, and academics.

To this literature, Professor Tal Golan<sup>2</sup> adds *Laws of Men and Laws of Nature*, a welcome and much-needed book-length work on the history of scientific evidence. The book, which derives from Golan's doctoral dissertation, can be roughly divided into two principal parts: The lion's share concentrates on nineteenth-century developments in England and the United States, often in the context of business-related civil litigation. The remainder looks at *fin de siècle* America, more narrowly focusing on the relationship between the legal system and three then-emerging technologies: blood microscopy, x-rays, and lie detectors. An epilogue attempts to tie these historical discussions to the modern day *Frye-Daubert* debates, but it is largely an afterthought and is appropriately separated as such.

Perhaps most salient among the book's goals is Golan's aspiration to bridge the divide between legal history and history of science by revealing a deeply symbiotic relationship between scientists and courts in the nineteenth century (pp. 1–2). As to Golan's success on this score, being a scientific evidence person as opposed to a historian, I defer to more qualified

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1. *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 597 (1993) (establishing a multi-factor test for assessing scientific reliability and tasking the judge with a "gatekeeping" role).

2. Professor of History, University of California, San Diego.

colleagues.<sup>3</sup> Instead, I would like to focus on Golan's other stated goal of providing historical context to the modern scientific evidence debates (p. 3). In this respect, the book performs a valuable service for modern reformers. After all, we have a natural tendency to think of scientific evidence problems as new: *Daubert* certainly is new; toxic torts are new; and "science" writ large perpetually seems new. But, as the accounts from *Laws of Men and Laws of Nature* emphatically remind us, the problem of scientific evidence is profoundly old (p. 4).

My chief regret is that Golan's treatment on this score fails to trace the problems and solutions of scientific evidence in any significant detail beyond the early 1900s. This is surely an unfair criticism, especially given his primary historiographic goal, but the modern field of scientific evidence could have really benefited from an unbroken account to the present. Indeed, if we supplement and update Golan's discussion—as I hope to do in a limited way in this Review—we quickly see that the problems and proposed solutions are not just old but also frustratingly recurring.

#### A. *Folkes v. Chadd*

*Laws of Men and Laws of Nature* opens with *Folkes v. Chadd* (1783),<sup>4</sup> scientific evidence's origin tale of sorts. According to legend, in an epic act of judicial creation, Lord Mansfield approved and set in motion the modern system of adversarial experts (pp. 6, 41–44). As Golan skillfully demonstrates through a detailed reconstruction of the case, however, like most origin tales, the *Folkes* fable turns out to be overly simplistic and triumphalist (p. 44). Lord Mansfield, it appears, couldn't have cared less about "inaugurating a new practice of calling experts as partisan witnesses" (pp. 6–7). That dubious distinction apparently belongs to no one person but instead to the gradual accretion of adversarialism and party control in the face of an oddly complacent and perhaps overconfident eighteenth-century English judiciary (pp. 50–51).

Blame issues aside, Golan's account of *Folkes* provides a look into late-eighteenth-century litigation that is fascinating not for its curiosities but rather for its parallels to modern cases. Indeed, it seems that the broader theoretical questions that shadow scientific evidence cases and commentators today were present from the very beginning.

The setting for the *Folkes* drama was Wells Harbor, a natural harbor surrounded by low-lying salt marshes in northeastern England. Human ingenuity (or hubris) being what it is, locals began draining the fertile marshland for agricultural use, counteracting the natural tidal flooding by constructing embankments. At the same time, the venerable harbor began

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3. E.g. Jennifer L. Mnookin, *Science at the Bar*, AM. SCI., Nov.–Dec. 2004, at x (reviewing *Laws of Men and Laws of Nature*).

4. P. 6 n.2 (citing 3 SYLVESTER DOUGLAS, REPORTS OF CASES ARGUED AND DETERMINED IN THE COURT OF THE KING'S BENCH IN THE TWENTY-SECOND, TWENTY-THIRD, TWENTY-FOURTH AND TWENTY-FIFTH YEARS OF THE REIGN OF GEORGE III 160 (1831)).

silting up, threatening the shipping industry (p. 9). The harbor commissioners, of course, blamed the developers and their embankments. The landowners responded that the silting would have happened anyway (p. 22). A scientific battle royale was thus set.

Just as they do today, the parties brought in their expert-champions. The harbor commissioners primarily relied on evidence that was anecdotal and experience based. Their parade of witnesses recounted the "rapid deterioration" of the harbor after the embankment's construction (p. 37). The commissioners also retained a group of distinguished civil engineers, "practical men of science, skilled practitioners," whose expertise came from their extensive experience and practice (pp. 26, 32). In contrast, the landowners turned to "scientists" as the term is understood today. Their star witness, John Smeaton, was a preeminent, well-published scientist, a member of the Royal Society, and a natural philosopher who believed that phenomena could be best explained by applying scientific principles (pp. 25, 30–31).

The *Folkes* court thereby immediately confronted two fundamental issues that are still widely debated in scientific evidence circles. As an initial matter, should a court decide among competing scientific methodologies? The judges in *Folkes* exhibited the classic split. Chief Justice Gould in the lower court had no trouble excluding a witness who failed to measure up to standard (p. 39). Lord Mansfield, however, reversed. Unwilling to choose favorites, Mansfield left the decision up to the jury (p. 45). As Golan hints in his analysis, this Gould versus Mansfield debate is akin to the Hatfields and the McCoys. The "Goulds," like the Supreme Court in *Daubert*, find comfort in judicial gatekeeping against unreliable or "junk" expertise. The "Mansfields" maintain a more ecumenical view (p. 49).

Presuming a gatekeeping role, courts then face the intractable question of what exactly constitutes good science. Modern scholars will recognize the two archetypal experts in *Folkes*: those who reason from anecdote and experience and those who reason from scientific principles. In a strange reversal of fortune, however, in *Folkes*, it was the scientist who was on the chopping block. A seemingly crabbed adherent to traditional experience-based expertise, Gould excluded the scientist's theories for being speculative and not based on direct observation (pp. 39, 44). On appeal, Mansfield in retrospect played the role of luminary, the progressive who gave the emerging science based in natural philosophy a chance. Two hundred years later, *Daubert* has come full circle, but with a twist. Today, with science safely seated on its throne, *Daubert* offers the opportunity of eliminating experience-driven expertise from the courtroom, as a number of commentators have advocated for handwriting and fingerprint analysis and the like.<sup>5</sup> One wonders if Mansfield would have been delighted or appalled.

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5. See, e.g., Robert Epstein, *Fingerprints Meet Daubert: The Myth of Fingerprint "Science" Is Revealed*, 75 S. CAL. L. REV. 605, 624–25 (2002) (questioning the use of fingerprinting in light of the method's untested assumptions); D. Michael Risinger & Michael J. Saks, *Science and Non-science in the Courts: Daubert Meets Handwriting Identification Expertise*, 82 IOWA L. REV. 21, 35, 39, 64–65 (1996) (questioning handwriting analysis).

### B. *Biased Experts and Conflicting Testimony*

To the modern observer, the elephant in the *Folkes* room is the problem of hired guns. Adversarial experts, after all, are routinely accused of distorting science in their parties' favor. As Golan notes, however, Lord Mansfield makes no mention of the problem in his opinion. Judicial myopia is unlikely—the common law of evidence obsessed over and routinely disqualified interested witnesses (p. 50). Golan offers an alternative, cultural explanation. Eighteenth-century English scientists were bound by gentlemanly codes of honor that closely tied social status to credibility and reputation (p. 50). Bias was therefore no concern at all, because the royal judges could trust men of science to provide unbiased, truthful opinions in court (p. 51).

This assumption, of course, was sheer folly. In nearly no time at all, courts faced “a continuous parade of leading men of science zealously contradicting each other from the witness stand” (p. 54). In a chapter appropriately entitled “The Common Liar, the Damned Liar, and the Scientific Expert,”<sup>6</sup> Golan shows this phenomenon plaguing early nineteenth-century English courts. Was a new sugar-refining process dangerously prone to explosions? One group of prestigious experts swore it was; predictably, another swore it was not (p. 56). Did a copper-smelting operation create acid rain and destroy crops? Proponents testified it did; some opponents remarkably characterized the acid as “a blessing, a shield against cholera and other diseases” (p. 74). Pollution emanating from alum works, contaminated well water, even the scope of the prized magenta dye patent and the definition of “coal”—all of the cases suffered the “familiar spectacle of two parties presenting flatly contradictory scientific evidence” (pp. 78, 80–81, 85, 91).

Of course, scientists can reasonably disagree on occasion, even establishing two respectable schools of thought. But judges are no fools, and, as Golan describes, they quickly grew suspicious (p. 89). Either the scientists were dishonest, or they were helpless against clever manipulation by the attorneys.<sup>7</sup> In any event, the experts were certainly not helping to resolve any cases. Juries were “bewildered, perplexed, and left in despair as to knowing how to decide” (p. 87). Judges became increasingly frustrated and “disgust[ed] at the partisanship” of the witnesses (p. 62).

Golan grimly notes that the conflicting testimony problem was not limited to civil litigation but spread to the criminal context as well (pp. 96–97). Two poison trials illustrate his point, although their “Crimes of the Century” status leaves one to wonder if they are representative—remember, in O.J. Simpson’s trial, even DNA was made to look unclear. The exemplars nevertheless serve their purpose: in one case, the defense expert even bragged to friends that he thought the victim had been poisoned but that “[the prosecu-

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6. See also p. 255 (quoting Judge William Foster at the New Hampshire Medical Society annual meeting in 1897: “There are three kinds of liars: the common liar, the damned liar, and the scientific expert.”).

7. Pp. 54, 105. Even the mighty Michael Faraday, father of electromagnetism, apparently was ensnared by plaintiff’s counsel. P. 67.

tion expert] did not know how to find it" (p. 99). The Attorney General and the Lord Chief Justice (and in turn, the public) were predictably not amused (p. 100). By the 1860s, hardly anyone had any confidence in scientific evidence. "[S]killed testimony, which ought to be the most decisive and convincing of them all, [was] of all the most suspicious and unsatisfactory."<sup>8</sup>

Many lawyers today know about the problem of conflicting experts and the "battle of the experts" problem through a famous 1901 article by Learned Hand: how can we expect jurors to decide between experts when the jurors' ignorance is the premise for allowing the expert to testify in the first place?<sup>9</sup> As Golan shows, however, before 1901 the dilemma was already old news (pp. 88, 139–40). And as modern commentators know, it has been a consistent refrain (or, perhaps less charitably, a broken record) ever since.<sup>10</sup> Lay decisionmakers, of course, ultimately must rely on proxies like appearance, demeanor, and language to determine an expert's reliability,<sup>11</sup> occasionally leading to spectacular blunders. Back in 1859, jurors were fooled into believing the validity of a test for poison (p. 102). Fast forwarding to the present, in the oft-quoted 1985 bench trial of *Wells ex rel. Maihafer v. Ortho Pharmaceutical Corp.*,<sup>12</sup> the judge was fooled into believing that spermicides caused birth defects. As Sam Gross dryly notes, despite being "a first rate specimen of judicial craft" the Wells decision was "absolutely wrong."<sup>13</sup> No scientific evidence (including a comprehensive review by the FDA) ever linked spermicides to birth defects.<sup>14</sup> The medical community had a conniption;<sup>15</sup> the press had a field day.<sup>16</sup>

8. P. 105 (quoting a January 1862 *Saturday Review*).

9. Learned Hand, *Historical and Practical Considerations Regarding Expert Testimony*, 15 HARV. L. REV. 40, 54 (1901) ("[H]ow can the jury judge between two statements each founded upon an experience confessedly foreign in kind to their own? It is just because they are incompetent for such a task that the expert is necessary at all.")

10. See, e.g., Lee M. Friedman, *Expert Testimony, Its Abuse and Reformation*, 19 YALE L.J. 247, 249 (1909) (describing the problem of conflicting testimony, often given by unscrupulous experts, and its ability to confuse jurors); William A. Wick & Erle A. Kightlinger, *Impartial Medical Testimony Under the Federal Civil Rules: A Tale of Three Doctors*, 34 INS. COUNS. J. 115, 117 (1967) (noting that jurors confronted with conflicting medical testimony may often choose "the best witness, rather than the best doctor").

11. Debra L. Worthington et al., *Hindsight Bias, Daubert, and the Silicone Breast Implant Litigation*, 8 PSYCHOL. PUB. POL'Y & L. 154, 158 (2002) (describing a 1983 study concluding that jurors use an expert's appearance and "paralanguage" as proxies for reliability).

12. 615 F. Supp. 262 (N.D. Ga. 1985).

13. Samuel R. Gross, *Expert Evidence*, 1991 WIS. L. REV. 1113, 1122. But see Joseph L. Gastwirth, *The Need for Careful Evaluation of Epidemiological Evidence in Product Liability Cases: A Reexamination of Wells v. Ortho and Key Pharmaceuticals*, 2 LAW, PROBABILITY & RISK 151, 180–85 (2003) (arguing that given the specific facts of the case and the studies offered at the time by the parties, the *Wells* decision may be undeservedly vilified in the literature).

14. Michael B. Bracken, *Spermicidal Contraceptives and Poor Reproductive Outcomes: The Epidemiologic Evidence Against an Association*, 151 AM. J. OBSTETRICS & GYNECOLOGY 552 (1985).

15. See, e.g., James L. Mills & Duane Alexander, *Teratogens and "Litogens"*, 315 NEW ENG. J. MED. 1234 (1984).

16. See, e.g., Editorial, *Federal Judges v. Science*, N.Y. TIMES, Dec. 27, 1986, at A22.

The bias or dishonesty concern is also alive and well today. Federal Judicial Center surveys in both 1991 and 1998 showed that federal district court judges thought the most common problem with expert testimony was experts “who ‘abandon objectivity and become advocates for the side that hired them.’”<sup>17</sup> The “scientist as prostitute” was the moving force behind Peter Huber’s crusade against “junk science” in the 1980s.<sup>18</sup> And recent revelations that forensic scientists fabricated results are related (although more extreme) examples of this phenomenon in the criminal context.<sup>19</sup>

That the problems surrounding adversarial experts have stayed with us for over two hundred years should be entirely unremarkable. The methods of presenting expert knowledge are fundamentally the same today as they were in 1783, and the system’s structure breeds these pathologies. If anything, the system’s attributes have gotten worse. Experts are now paid handsomely for their services, and their future marketability is influenced by their parties’ success. Experts also spend considerable time preparing and rehearsing with their attorney-employers and worrying about the opposing side’s cross-examination.<sup>20</sup> It is no small wonder then that even a scrupulous expert will shade his testimony in his party’s favor. At the same time, jurors—carefully culled to ensure an utter lack of scientific expertise—must absorb complex scientific principles presented orally,<sup>21</sup> and they must then choose between conflicting experts. The results are predictably far from desirable.

### C. *Solutions Then, Solutions Now*

Persistent problems are understandable—after all, some problems are just hard to solve. What is more worrisome, however, is that even the solutions appear to be recurring. In a terrific chapter chronicling the nineteenth-century debates on scientific evidence in England and the United States, Golan depicts distraught scientists and lawyers searching for a cure (pp. 120, 140). By 1860, there was a general feeling in England that the “crisis [in expert evidence] had reached intolerable proportions,” and that the problem stemmed from improper legal procedures or institutions (pp. 120–21). At the same time, “[t]he reform of expert testimony became one of the hottest topics in the meetings of the various bar associations that mushroomed

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17. MOLLY TREADWAY JOHNSON ET AL., FED. JUD. CTR., EXPERT TESTIMONY IN FEDERAL CIVIL TRIALS: A PRELIMINARY ANALYSIS 5 (2000).

18. PETER W. HUBER, GALILEO’S REVENGE: JUNK SCIENCE IN THE COURTROOM 17–20 (1991).

19. Craig M. Cooley, *Reforming the Forensic Science Community to Avert the Ultimate Injustice*, 15 STAN. L. & POL’Y REV. 381, 399–406 (2004).

20. Gross, *supra* note 13, at 1138–39.

21. See David L. Faigman et al., *Check Your Crystal Ball at the Courthouse Door, Please: Exploring the Past, Understanding the Present, and Worrying about the Future of Scientific Evidence*, 15 CARDOZO L. REV. 1799, 1821 (1994) (“Indeed, judicial assessment of validity might be better conducted through written briefs rather than oral testimony.”).



in late-nineteenth-century America" (p. 140). Proposals for reform abounded.

Golan recounts an amazing series of lectures in 1860 at the Royal Society of Arts in England in which members laid out, for all intents and purposes, what many will recognize as the modern corpus of scientific evidence reforms. Chemist Robert Angus Smith proposed the use of independent experts and a move toward written rather than oral expert testimony (pp. 111–13). He and Professor Alfred Swaine Taylor, whom Golan describes as "the most sought after scientific witness in Britain," also advocated for scientific advisors who could help judges better understand the scientific material and keep witnesses honest (pp. 112, 115–16). Edwin Chadwick advocated for "scientific tribunals," to which courts could officially refer cases for comment (p. 113). Opponents (mainly lawyers)<sup>22</sup> argued that experts often had legitimate differences of opinion or that the system was already as good as possible. To them, the reforms were therefore unnecessary (pp. 114–16). A generation later, the same debate reemerged in two sparring English scientific journals, one mundanely entitled *Chemical News*, the other more curiously named *The Journal of Gas Lighting, Water Supply, & Sanitary Improvement* (pp. 129–35). Identical proposals surfaced across the Atlantic, provoking similar naysayers.<sup>23</sup>

These proposals for court-appointed experts, scientific tribunals, and the like, however, were not unique to the nineteenth-century. Indeed, combining portions of Golan's book with the subsequent scientific evidence literature reveals that these ideas have been regularly recycled and unsuccessfully attempted over the last 150 years.<sup>24</sup>

### 1. Court-Appointed Experts

Court-appointed expert witnesses are one of the oldest and most popular proposed solutions to the problem of the biased or dishonest expert.<sup>25</sup> The

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22. P. 120 (noting that almost every scientific commentator from Victorian England seemed to support neutral experts and scientific advisors).

23. Pp. 135–36, 140. For example, in a posthumous 1897 *Harvard Law Review* article, Judge William Foster argued that conflicting experts were beneficial because they generated additional investigation. William L. Foster, *Expert Testimony,—Prevalent Complaints and Proposed Remedies*, 11 HARV. L. REV. 169, 179 (1897), cited in p.140 n.65. Judge Foster further argued that the problems with expert testimony were exaggerated and would not be cured by any of the proposals. Thus, "it [was] best to 'let well enough alone.'" *Id.* at 185.

24. See, e.g., WILLARD BARTLETT, N.Y. STATE MED. ASS'N, MEDICAL EXPERT EVIDENCE: THE OBSTACLES TO RADICAL CHANGE IN THE PRESENT SYSTEM 10–11 (1899) (arguing that to combat junk science, courts should appoint independent experts, technical advisors, and members of consulting panels); Peter J. Goss et al., *Clearing Away the Junk: Court-Appointed Experts, Scientifically Marginal Evidence, and the Silicone Gel Breast Implant Litigation*, 56 FOOD & DRUG L.J. 227, 227 (2001) (discussing the three commonly proposed reforms); Harold L. Korn, *Law, Fact, and Science in the Courts*, 66 COLUM. L. REV. 1080, 1083–84 (1966) (same).

25. Gross, *supra* note 13, at 1189 (noting that court-appointed experts have been suggested for over a century); Stephan Landsman, *Of Witches, Madmen, and Products Liability: An Historical Survey of the Use of Expert Testimony*, 13 BEHAV. SCI. & L. 131, 156 (1995) (remarking that court-appointed expert proposals are "as old as the American republic").

proposal has natural appeal. To the extent that the problems of expert testimony are caused by partisanship and financial interest, insulating experts from party influence makes sense.

Perhaps as a result, court-appointed expert proposals have enjoyed a good deal of traction. Nearly every scientist-commentator in Victorian England supported them,<sup>26</sup> and legal commentators have regularly discussed and advocated for their use ever since.<sup>27</sup> At the beginning of the twentieth century, Michigan and Rhode Island passed limited bills allowing the use of neutral experts,<sup>28</sup> and California introduced similar legislation.<sup>29</sup> By mid-century, both the Model Code of Evidence and the Model Expert Testimony Act included provisions for court-appointed witnesses.<sup>30</sup> Ultimately, court-appointed experts found their way into Federal Rule of Evidence 706, and today, over thirty states have adopted Rule 706.<sup>31</sup> Even Justice Breyer, in his concurrence to *General Electric Co. v. Joiner*,<sup>32</sup> famously advocated for the use of court-appointed experts.<sup>33</sup>

Unfortunately, court-appointed experts have been far from a triumph in practice. As David Kaye notes, “[n]ow, as then,” court-appointed experts are often proposed as a solution but are almost never used.<sup>34</sup> A Federal Judicial Center survey published in 1994 showed that, despite having clear authority

26. P. 120; see also Landsman, *supra* note 25, at 146 (reporting that between 1820 and the 1850s, doctors increasingly supported “nonadversarial methods of gathering expert medical opinion”).

27. E.g., 1 JOHN HENRY WIGMORE, A TREATISE ON THE ANGLO-AMERICAN SYSTEM OF EVIDENCE IN TRIALS AT COMMON LAW § 563, at 966 (2d ed. 1923), discussed in Gross, *supra* note 13, at 1189; F. Hastings Griffin, Jr., *Impartial Medical Testimony: A Trial Lawyer in Favor*, 34 TEMP. L.Q. 402, 405–15 (1961); Clemens Herschel, *Services of Experts in the Conduct of Judicial Inquiries*, 21 AM. L. REV. 571, 577 (1887); Emory Washburn, *Testimony of Experts*, 1 AM. L. REV. 45, 61 (1867); Wick & Kightlinger, *supra* note 10, at 117; Note, *Expert Testimony*, 5 AM. L. REV. 428, 441–42 (1870); Karen Butler Reisinger, Note, *Court-Appointed Expert Panels: A Comparison of Two Models*, 32 IND. L. REV. 225, 234 (1998); see also Landsman, *supra* note 25, at 144 (describing a very early proposal by T.R. Beck, writer of the treatise *Elements of Medical Jurisprudence*, in 1823). For comprehensive lists of previous proposals for court-appointed experts, see DAVID H. KAYE ET AL., THE NEW WIGMORE: A TREATISE ON EVIDENCE, *Expert Evidence* § 10.4.1, at 347–48 nn.3–5 (2004), and Gross, *supra* note 13, at 1116 n.8.

28. Friedman, *supra* note 10, at 249–50 (describing the Michigan and Rhode Island statutes). Michigan’s statute was ultimately declared unconstitutional because it infringed on the executive’s power to call witnesses in criminal cases. P. 257; *People v. Dickerson*, 129 N.W. 198 (Mich. 1910); Note, *Appointment of Expert Witnesses by the Court*, 24 HARV. L. REV. 483, 483–84 (1911).

29. A.M. Kidd, *The Proposed Expert Evidence Bill*, 3 CAL. L. REV. 216, 218 (1914) (describing proposed court-appointed expert legislation in California); see also KAYE ET AL., *supra* note 27, § 10.4.1, at 348 n.4 (citing a proposal by the New York Bar Association in 1909).

30. Mason Ladd, *Expert Testimony*, 5 VAND. L. REV. 414, 430–31 (1952) (noting that both provisions permitted court-appointed experts to co-exist with traditional adversarial experts). The Model Expert Testimony Act provision was subsequently endorsed by the ABA Committee on the Improvement of the Law of Evidence. Gross, *supra* note 13, at 1189.

31. JACK B. WEINSTEIN & MARGARET A. BERGER, 3 WEINSTEIN’S FEDERAL EVIDENCE § 706(04) (1988), cited in Gross, *supra* note 13, at 1189–90.

32. 522 U.S. 136 (1997).

33. *Id.* at 147, 149–50 (Breyer, J., concurring).

34. KAYE ET AL., *supra* note 27, § 10.4.1, at 348; see also Gross, *supra* note 13, at 1191; Worthington et al., *supra* note 11, at 162 (noting that judges rarely appoint experts).

to do so, 80 percent of federal district court judges have never appointed an expert.<sup>35</sup>

Moreover, mechanisms to facilitate neutral experts have historically been non-starters, often due to judicial apathy or outside resistance. To help judges locate and select experts, scientific, medical, and legal associations have attempted from time to time to set up pre-approved lists of experts.<sup>36</sup> Golan, for example, discusses proposals from bar associations to establish official lists in the mid-nineteenth century.<sup>37</sup> These attempts fell flat. Attempts were also made in Massachusetts and elsewhere to establish such panels in the 1880s<sup>38</sup> and again around 1910<sup>39</sup>—all were rejected by state legislatures.

In the 1950s, renewed efforts succeeded in establishing official medical expert lists in New York City,<sup>40</sup> New Jersey,<sup>41</sup> Baltimore,<sup>42</sup> Miami, Cleveland, Los Angeles, and the federal district courts for the Western and Eastern Districts of Pennsylvania and the Northern District of Illinois.<sup>43</sup> Some early reviews seemed genuinely positive: judges found an increase in testimony quality and a decrease in conflicting evidence.<sup>44</sup> Ultimately, however, all of the programs faded away, victims of neglect.<sup>45</sup> Even the most famous instance,

35. Joe S. Cecil & Thomas E. Willging, *Accepting Daubert's Invitation: Defining a Role for Court-Appointed Experts in Assessing Scientific Validity*, 43 EMORY L.J. 995, 1004 (1994).

36. See *id.* at 1022 (noting judicial complaints about the difficulty of locating appropriate experts); Gross, *supra* note 13, at 1191 (observing that one barrier to court-appointed experts is the difficulty of finding experts).

37. P. 140; see also Landsman, *supra* note 25, at 146 (reporting significant discussions in mid-nineteenth century medical journals on having panels of experts).

38. Landsman, *supra* note 25, at 146 (citing JAMES C. MOHR, DOCTORS AND THE LAW: MEDICAL JURISPRUDENCE IN NINETEENTH-CENTURY AMERICA 211 (1993)).

39. Friedman, *supra* note 10, at 250.

40. SPECIAL COMM. ON THE MED. EXPERT TESTIMONY PROJECT, ASS'N OF THE BAR OF THE CITY OF NEW YORK, IMPARTIAL MEDICAL TESTIMONY (1956).

41. Gross, *supra* note 13, at 1192 (citing Theodore I. Botter, *The Court-Appointed Impartial Expert*, in USING EXPERTS IN CIVIL CASES, 57, 62 n.17 (Melvin D. Kraft ed., 1977)).

42. Elwood S. Levy, *Impartial Medical Testimony—Revisited*, 34 TEMP. L.Q. 416, 417 (1961) (describing the establishment of the Baltimore Project in 1955 under Emory H. Niles, Chief Judge of the Supreme Bench).

43. See Francis L. Van Dusen, *The Impartial Medical Expert System: The Judicial Point of View*, 34 TEMP. L.Q. 386, 390 n.12 (1961) (reporting the rule in 1959 allowing panels in the Northern District of Illinois); Henry Menin & Gary Charles Leedes, Note, *The Present Status of the Impartial Medical Expert in Civil Litigation*, 34 TEMP. L.Q. 476, 476–77 (1961) (conducting survey that showed plans in effect in Miami, Cleveland, Baltimore, and Los Angeles, and in the federal courts for the Western and Eastern Districts of Pennsylvania). All of the plans appeared to have standing panels except for Cleveland's, in which courts made requests to the Academy of Medicine in Cleveland. Menin & Leedes, *supra*, at 480–81 & n.35.

44. David W. Peck, *Impartial Medical Testimony: A Way to Better and Quicker Justice*, 22 F.R.D. 21, 24, 24–25 (1958) (reporting that judges and lawyers in New York project cases were pleased with results); Van Dusen, *supra* note 43, at 394 (reporting results from the Eastern District of Pennsylvania).

45. Gross, *supra* note 13, at 1192 (reporting that the New Jersey project was only used six times a year from 1961 to 1975, and that the Los Angeles project was not used at all from 1966 to 1967).

the New York Medical Expert Testimony Project, so promising at first,<sup>46</sup> never really caught on.<sup>47</sup> In the end, only 3 to 6 percent of the applicable personal injury trials took advantage of the project, and “[b]y 1976, the project had fallen into general disuse.”<sup>48</sup>

Today, the list concept has once again resurfaced. For example, until it recently closed in 2003, the Private Adjudication Center at Duke University School of Law maintained a Registry of Independent Scientific and Technical Advisors.<sup>49</sup> The American Association for the Advancement of Science<sup>50</sup> has also established the Court Appointed Scientific Experts (CASE) program, which has been matching interested judges with vetted scientific experts since 2001.<sup>51</sup> The latest embodiment of the recurring theme, CASE has been endorsed by Justice Breyer and the House Committee on Science,<sup>52</sup> but if history is any indication, it too faces an uphill battle.

## 2. Scientific Tribunals and Expert Juries

A related but distinct proposal focuses on using scientific tribunals or other types of expert decisionmakers.<sup>53</sup> Concerned about jury ignorance? Replace the lay jury with an expert one.<sup>54</sup> As Golan notes, expert juries have an ancient lineage at common law.<sup>55</sup> “Trade disputes” often involved juries of “goldsmiths, booksellers, wine merchants, attorneys, and fishmongers,” particularly when the jury had to decide if guild regulations had been vio-

46. Peck, *supra* note 44, at 24 (reporting that the New York project had processed 575 cases by 1958, with 330 settled at pre-trial, 62 settled at trial, and 68 tried). The New York project was established in December 1952. Note, *The New York Medical Expert Project: An Experiment in Securing Impartial Testimony*, 63 YALE L.J. 1023, 1023–24 (1954).

47. Gross, *supra* note 13, at 1192.

48. *Id.*

49. See Joe S. Cecil, *Construing Science in the Quest for “Ipse Dixit”: A Comment on Sanders and Cohen*, 33 SETON HALL L. REV. 967, 971 & nn.17 & 19 (2003) (discussing the use of the Duke registry in *Soldo v. Sandoz Pharm. Corp.*, 244 F. Supp. 2d 434 (W.D. Pa. 2003)). The Private Adjudication Center effectively closed in 2003, in part due to funding issues. See Open Letter from Professor Thomas B. Metzloff and Cheryl J. Zielsdorf (July 17, 2003) (on file with author).

50. CASE technically operates under the auspices of the National Conference of Lawyers and Scientists, a joint committee of AAAS and the American Bar Association Science and Technology Section. See American Association for the Advancement of Science, CASE Mainpage, <http://www.aaas.org/spp/case/case.htm> (last visited Jan. 29, 2006).

51. *Id.*

52. *Id.*

53. KAYE ET AL., *supra* note 27, § 10.4.1, at 348 n.6 (describing expert decisionmakers as a “variation[] on [the] theme” of court-appointed experts).

54. See James Oldham, *The History of the Special (Struck) Jury in the United States and Its Relation to Voir Dire Practices, the Reasonable Cross-Section Requirement, and Peremptory Challenges*, 6 WM. & MARY BILL RTS. J. 623, 655 (1998) (“The notion of bringing experts into dispute settlement processes makes good common sense and has an extensive history.”).

55. Pp. 18–19. See generally James C. Oldham, *The Origins of the Special Jury*, 50 U. CHI. L. REV. 137 (1983) (providing a history of special juries until the mid-eighteenth century).

lated.<sup>56</sup> Special juries were also used in cases involving foreigners and other special groups including "Jews (but not gypsies), Welshmen (but not Scots), clerics, university scholars, merchants, and other guild members,"<sup>57</sup> and cases involving claims of pregnancy.<sup>58</sup> Even Lord Mansfield used merchant-jurors in commerce cases to develop the commercial law for which he became famous.<sup>59</sup> By the time of the great scientific evidence debates of the mid-1800s, however, expert juries had vanished (p. 20).

Expert jury proposals soon reemerged. As Golan reports, in 1862, a concerned British Association for the Advancement of Science ("BAAS") proposed abolishing the jury in technical cases and replacing it with a judge and "up to three skilled assessors" (pp. 121–22). Although initially thought infeasible due to English jury traditions (p. 122), a BAAS-related reform eventually won out. Golan notes that the expert evidence problem subsided in England after the late nineteenth century as technical trials were diverted from the jury (pp. 138, 143).

We can readily enrich Golan's discussion with parallels from across the Atlantic. At the time of the Founding, U.S. courts also used special juries. Merchant juries were prevalent in late-eighteenth-century New York and South Carolina,<sup>60</sup> and in antebellum Louisiana.<sup>61</sup> Merchant juries similarly disappeared in New York and South Carolina circa 1800.<sup>62</sup> Louisiana persisted, but its use of merchant juries quickly declined after the abolition of its Commercial Court in 1846.<sup>63</sup>

Of course, U.S. courts did not adopt British-type jury reforms in the late 1800s (pp. 138–39), nor have they since, for the Seventh Amendment and its state counterparts have always presented formidable obstacles. In the late 1970s, legal historians Patrick Devlin and Morris Arnold, among others, clashed over whether the Seventh Amendment extended to complex civil

56. P. 19; see Hand, *supra* note 9, at 41–42 (noting that expert juries were common in London in the fourteenth century for trade disputes); Oldham, *supra* note 55, at 174 (describing a 1394 jury of "cooks and fishmongers, where one was accused of selling bad food" (quoting JAMES BRADLEY THAYER, A PRELIMINARY TREATISE ON EVIDENCE AT THE COMMON LAW 94 & n.4 (1898))); *id.* (describing a libel trial in which the defendant requested jurors from the publishing industry).

57. P. 19. These groups were entitled to special juries "of the half tongue," in which half of the jurors belonged to the defendant's group. *Id.*

58. P. 19. Pregnant women could "plead the belly," thereby obtaining a reprieve during pregnancy. All-female juries of matrons were used as investigators in these cases. See Oldham, *supra* note 55, at 171–72.

59. P. 21; Oldham, *supra* note 55, at 173 (noting that merchant juries "existed long before Lord Mansfield").

60. MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780–1860, at 155–58 (1977), discussed in Oldham, *supra* note 54, at 642–43.

61. Oldham, *supra* note 54, at 657–58.

62. HORWITZ, *supra* note 60, at 157–59 (noting disappearance of merchant juries in New York after 1807 and South Carolina after 1797).

63. Oldham, *supra* note 54, at 658 (noting that until then, the Louisiana court was the "closest approximation in the United States to Lord Mansfield's use of merchant juries to incorporate mercantile practices into the common law").

cases.<sup>64</sup> By and large, this most recent attempt to abolish juries in complex cases failed.<sup>65</sup> Arguably the only remnant is a curious Delaware statute authorizing the use of special juries in complex cases,<sup>66</sup> and this statute has fared no better than its court-appointed expert counterparts. Requests for special juries under the Delaware provision are frequently denied for lack of sufficient complexity, with some judges appearing hostile to the whole concept.<sup>67</sup> Indeed, the few special jury statutes that remain on the books are generally neglected or disparaged by courts.<sup>68</sup> Even when a court offers to empanel a special jury, as Judge Rubin did in the Bendectin multidistrict litigation, the parties generally decline.<sup>69</sup>

An alternative path around these roadblocks is to empanel scientific advisory tribunals to help jurors or judges. Early commentators, including Learned Hand, proposed just that.<sup>70</sup> Variants of this reform have been much discussed lately, particularly in the wake of the silicone breast implant litigation. As part of the breast implant multidistrict litigation, Judge Pointer established a National Science Panel of court-appointed experts under Rule

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64. Compare Patrick Devlin, *Jury Trial of Complex Cases: English Practice at the Time of the Seventh Amendment*, 80 COLUM. L. REV. 43, 65–77 (1980) (arguing that juries were not historically used in complex equity cases), with Morris S. Arnold, *A Historical Inquiry into the Right to Trial by Jury in Complex Civil Litigation*, 128 U. PA. L. REV. 829, 848 (1980) (arguing that there “seems to be no good historical foundation for the argument that plaintiffs may be denied the right to a jury trial because their cases are complex”). For citations to the extensive literature in this debate, see Oldham, *supra* note 55, at 138 n.5.

65. Oldham, *supra* note 54, at 655–56 & n.204 (arguing, however, that the decision in *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996), may have made inroads on the jury right in patent cases).

66. DEL. CODE ANN. tit. 10, § 4506 (2005) (“The Court may order a special jury upon the application of any party in a complex civil case.”), noted in Oldham, *supra* note 54, at 634; *In re Asbestos Litigation*, 551 A.2d 1296 (Del. Super. Ct. 1988) (upholding constitutionality of statute).

67. See *Bradley v. A.C. & S. Co.*, 1989 WL 70834 (Del. Super. Ct. May 23, 1989) (rejecting a special jury motion because most science can be explained to ordinary jurors and expressing concerns that special jurors might have preconceived ideas); Oldham, *supra* note 54, at 659 (noting the resistance of superior court judges to special juries). Oldham notes that special juries are used occasionally in Delaware nevertheless. Oldham, *supra* note 54, at 661–62 (citing *McLain v. General Motors Corp.*, 569 A.2d 579 (Del. 1990), and *Ramada Inns, Inc. v. Dow Jones & Co.*, 1987 WL 28311 (Del. Super. Ct. Oct. 22, 1987)).

68. E.g., Oldham, *supra* note 54, at 641–42 (discussing *Schuster v. City of New York*, 205 N.Y.S.2d 190 (Sup. Ct. 1960), in which the judge denied the special jury request and “expressed his strong distaste for the elitist nature of ‘blue ribbon’ juries”). See generally *id.* at 633–41 (reporting states with special jury statutes: Alabama, Arkansas, Delaware, Indiana, Maryland, New York, Virginia, West Virginia; and states with them under common law: Alaska and Hawaii). Judicial hostility is no small wonder, given that special juries were historically often fueled by elitist or racist sentiments. See Lawrence M. Friedman, *Some Notes on the Civil Jury in Historical Perspective*, 48 DEPAUL L. REV. 201, 216 (1998) (“The whole concept of a ‘blue-ribbon’ jury is suspect today—and for good reason.”).

69. *In re Richardson-Merrell, Inc. “Bendectin” Prods. Liab. Litig.*, 624 F. Supp. 1212, 1217 (S.D. Ohio 1985). As Judge Rubin acknowledged, blue-ribbon juries are not recognized under the Federal Rules of Civil Procedure. Thus, “[o]nly by agreement of all parties could [a blue-ribbon jury] have been used.” *Id.* at 1217; see also Joseph Sanders, *From Science to Evidence: The Testimony on Causation in the Bendectin Cases*, 46 STAN. L. REV. 1, 81 (1993) (discussing blue-ribbon juries).

70. Hand, *supra* note 9, at 56–57; see also Note, *Expert Testimony in Judicial Proceedings*, 9 ALB. L.J. 122, 122 (1874) (advocating for a similar proposal).

706 to assess substantive causation issues.<sup>71</sup> Somewhat differently, Judge Jones of the District of Oregon used a panel of technical advisors to help the court assess its breast-implant-related *Daubert* issues.<sup>72</sup> Promising solutions? Certainly. But despite having percolated for over a century, expert tribunals continue to be the exception rather than the rule.

### 3. Self-Regulation

One last reform worth mentioning is having professional societies police their own members. As Golan describes, some early twentieth-century reformers, conceding the inviolability of the jury, pinned their hopes on self-regulation by the professions.<sup>73</sup> For example, in 1910, the great hope was that codes of ethics would encourage more scrupulous expert testimony.<sup>74</sup> Consistently clever, Golan even links *Frye*'s "general acceptance" standard to attempts to use professional associations as a regulatory mechanism (p. 258).

Here too, further inquiry reveals self-regulation to be a recurring reform. The idea reappeared in Minnesota in the 1940s, when physicians tried to make biased testimony a violation of ethics rules.<sup>75</sup> Most recently, the American Medical Association has taken the lead, encouraging licensing boards to discipline members for unethical testimony.<sup>76</sup>

Predictably, the reform has stalled. Recent studies show that only seven out of thirty-six specialty organizations surveyed had clearly defined disciplinary procedures for addressing unethical testimony.<sup>77</sup> The vanguard of the movement, the American Association of Neurological Surgeons ("AANS"), has conducted fifty investigations since 1983, with only ten resulting in discipline.<sup>78</sup>

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71. See *Allison v. McGhan Med. Corp.*, 184 F.3d 1300, 1310–11 & n.9 (11th Cir. 1999) (discussing the appointment of a National Science Panel in the multidistrict phase of the silicone breast implant litigation); Goss et al, *supra* note 24, at 238–39; Barbara S. Hulka et al., *Experience of a Scientific Panel Formed to Advise the Federal Judiciary on Silicone Breast Implants*, 342 NEW ENG. J. MED. 812, 812–14 (2000) (discussing procedures used by the Pointer panel).

72. *Hall v. Baxter Healthcare Corp.*, 947 F. Supp. 1387, 1392–94 (D. Or. 1996).

73. P. 257; see also BARTLETT, *supra* note 24, at 16–17, 22–23 (arguing that medical associations should regulate medical experts through ethics rules, and that these internal reforms would be ideal because they would not interfere with "existing rules of judicial procedure"); Friedman, *supra* note 10, at 256 (arguing for professional standards for experts as the only practical solution).

74. P. 258. But see KAYE ET AL., *supra* note 27, § 10.4.2, at 359 (noting that professional ethics codes often have provisions on expert testimony, but that these provisions are largely aspirational).

75. Menin & Leedes, *supra* note 43, at 478 (noting that such provisions were difficult to enforce).

76. KAYE ET AL., *supra* note 27, § 10.4.2, at 359 n.60 (citing Amer. Med. Ass'n Policy Statements H-265.993 and H-265.992).

77. Aubrey Milunsky, *Lies, Damned Lies, and Medical Experts: The Abrogation of Responsibility by Specialty Organizations and a Call for Action*, 18 J. CHILD NEUROLOGY 413, 416 (2003).

78. KAYE ET AL., *supra* note 27, § 10.4.2, at 359–60. The Seventh Circuit upheld AANS's disciplinary practices in 2001. *Austin v. Amer. Ass'n of Neurological Surgeons*, 253 F.3d 967, 973–74 (7th Cir. 2001) (Posner, J.) ("More policing of expert witnessing is required, not less.").

Even if successful, these reforms seem ill-conceived—or at minimum, incomplete—and not just because of the adage that self-regulation means no regulation. Typical scientists, as unlicensed professionals, simply do not have professional societies strong enough to give their ethical codes teeth. At the same time, self-policing by doctors and other more organized professional groups will inevitably yield perverse results. Exactly who files disciplinary charges? Judges, lawyers, and the general public cannot—they are precluded under a *self-regulation* scheme. Opposing experts in typical slip-and-fall cases will not—few if any will waste valuable time and energy filing grievances. The primary movers under a self-regulation regime will be the doctor-defendants sued for malpractice, hoping to chill plaintiffs' experts.<sup>79</sup> Indeed, in twenty years, all but one of the AANS claims have been filed against plaintiffs' experts.<sup>80</sup>

#### D. *The Big Question*

So the big question raised by *Laws of Men and Laws of Nature* is this: are we in fact spinning our wheels? Is this latest feverish round of scientific evidence debates and proposals just another iteration of a seemingly endless (and pointless) cycle?

Over a century ago, Justice Willard Bartlett of New York remarked that many medical expert reforms had already been proposed, but none had "been carried into effect."<sup>81</sup> The reason, Justice Bartlett suggested, was opposition from the bar and the adversarial and jury traditions of the country.<sup>82</sup> Golan's account concurs (pp. 140, 256). Proposals for abolishing the jury or instituting special tribunals infringe on the jury tradition, and independent experts infringe on the adversarial system and its peculiar view of court neutrality (p. 256). Consequently, while the end of the nineteenth century teemed with solutions, none were actually helpful (p. 256). Judges and legislatures were reluctant to toy with the adversarial system (p. 140).

And so it has been in the ensuing years. For example, while a few bar associations supported official expert lists, many opposed them. The Maryland Bar Association and the Baltimore City Bar Association came out against the Baltimore Project, and the Medico-Legal Committee of the Philadelphia Bar Association opposed the Eastern District of Pennsylvania's plan.<sup>83</sup> More recently, the Association of Trial Lawyers of America ("ATLA") has vehemently opposed the CASE project, arguing that there is no need for court-appointed experts, that neutral experts do not exist, and that CASE would undermine "the adversarial process that has stood at the

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79. *Austin*, 253 F.3d at 972–73.

80. KAYE ET AL., *supra* note 27, § 10.4.2, at 361.

81. BARTLETT, *supra* note 24, at 3.

82. *Id.* at 12, 15–16.

83. Levy, *supra* note 42, at 419.



heart of the Anglo-Saxon judicial system for more than eight hundred years.”<sup>84</sup>

Modern commentators concur with this explanation. Sam Gross has argued that the neglect of court-appointed experts today is in large part due to trial bar opposition and an adversarially focused judicial outlook.<sup>85</sup> Stephan Landsman similarly predicts that reform proposals will not “replace more adversarial mechanisms any time soon” because they “strengthen already too powerful professional establishments and their inquisitorial essence is ill-fitted to . . . adversarial expectations.”<sup>86</sup>

As Golan rightly comments, to fix the expert testimony problem, something must yield in the “sacred triangulation of the adversarial system—the political postulate of the lay jury, the traditional right of the parties to furnish all evidence, or the neutral position of the court” (pp. 256–57). England addressed its problem by sacrificing juries (p. 138). The Seventh Amendment sternly informs us that no such thing is happening here. As an ideological institution of liberty and a bulwark of Jacksonian democracy, the lay jury carries too much baggage in the United States (p. 139).

So is there any hope? One possibility may be *Daubert* itself, whose true import is not its oft-quoted four-factor test<sup>87</sup> but rather the shift in judicial thinking that it promotes.<sup>88</sup> Since *Daubert*, judges have increasingly embraced their role as scientific gatekeepers, seriously inserting themselves into the process of receiving expert evidence perhaps for the first time in history. To be sure, Golan notes that courts have turned to evidence law in the past: the ultimate issue rule, the requirement of hypothetical questions for experts, and the hearsay doctrine were all nineteenth-century attempts to rein in experts (pp. 140–43). Even *Frye* itself supported this effort by halfheartedly requiring judges to police expert evidence (pp. 258, 263–64). Yet I surmise that the post-*Daubert* world may be different. Judges under *Daubert* grapple substantively with science, forcing the good ones to inform themselves about scientific concepts and methods, and placing pressure on their traditionally passive mien. No longer can they count heads or hide behind arcane and formalistic evidence rules. The more judges take active roles, the weaker adversarial norms will become.<sup>89</sup> This transformative potential of *Daubert*, coupled with the modern willingness to accept the role of the

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84. Lisa Gelhaus, *A Case Against CASE*, TRIAL, Aug. 1999, at 11, 13 (quoting ATLA position paper (internal quotation marks omitted)).

85. Gross, *supra* note 13, at 1197–98.

86. Landsman, *supra* note 25, at 156.

87. *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 593–94 (1993) (falsifiability, peer review, standards and error rates, and general acceptance).

88. Edward K. Cheng & Albert H. Yoon, *Does Frye or Daubert Matter? A Study of Scientific Admissibility Standards*, 91 VA. L. REV. 471, 503 (2005).

89. *Id.* (characterizing *Daubert* as a move toward “judicial management” to reduce court costs and arguing that the trend will continue).

managerial judge,<sup>90</sup> may encourage a greater degree of inquisitorial thinking, opening the door to institutions like court-appointed experts and scientific tribunals.

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The observant reader will note that in writing this review, I have seemingly skipped the last third of Golan's book, the part dealing with blood microscopy, x-rays, and lie detectors. This neglect should not be interpreted as passive criticism, but rather a function of available space. Indeed, the chapters are filled with other worthwhile accounts of the interplay between law and science, in which one can see parallels to other modern scientific evidence issues as well: blood microscopy to the problem of unresolved scientific questions (p. 172), x-rays to recent debates over videotape and computer evidence (p. 209), and lie detectors to the future possibility of using brain mapping (pp. 248–49).<sup>91</sup>

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Professor Golan has produced an important work, a long-overdue historical addition to the scientific evidence literature. It is a must-read, not only for scientific evidence scholars, but also for anyone seeking a richer understanding of the continuing and frustrating conflicts between law and science. In his well-known book, Mirjan Damaška paints a sunny future for scientific evidence, arguing that science in the courtroom will cause a shift toward special juries, court-appointed experts, and the like.<sup>92</sup> After reading *Laws of Men and Laws of Nature*, I am admittedly less sanguine, but I remain hopeful, for *Daubert* may be just the new beginning that scientific evidence has been waiting for.

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90. See generally Abram Chayes, *The Role of the Judge in Public Law Litigation*, 89 HARV. L. REV. 1281 (1976) (discussing the new judicial managerial role); Judith Resnik, *Managerial Judges*, 96 HARV. L. REV. 374 (1982) (same).

91. See Robin Marantz Henig, *Looking for the Lie*, N.Y. TIMES, Feb. 5, 2006 (Magazine), at 47 (describing the latest generation of polygraphs).

92. MIRJAN DAMAŠKA, EVIDENCE LAW ADRIFT 143–52 (1997).